

Appl. No. 10/089,200
Amdt. dated August 1, 2005
Reply to Office action of April 1, 2005

In the Claims:

Claims 21-42 are present. Claims 28, 37 and 39 are amended herein. New claims 41 and 42 are added. The remaining claims are not amended in this response. Claims 1-20 were previously canceled.

1-20. (canceled)

21. (previously presented) An ignition actuation mechanism for a lighter for generating discharge voltage that causes a spark of electrical current between ignition electrodes to ignite fuel gas when an actuation member is pressed including:

a first elastic member positioned to resist actuation movement of the actuation member having:

a first spring rate; and

a second elastic member positioned in parallel with said first elastic member to resist actuation movement of the actuation member having:

a second spring rate higher than said first spring rate, said second elastic member being positioned for engagement to resist actuation movement of the actuation member only after more than half of the actuation movement of said first elastic member, whereby the effective spring rate to resist pressing movement of the actuation member sharply increases during the ignition actuation.

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22. (previously presented) The ignition actuation mechanism as defined in claim 21 including:

a piezoelectric mechanism for generating the discharge voltage having:

an actuation end; and

the actuation member, said actuation member being slidably mounted to operate said actuation end.

23. (previously presented) The ignition actuation mechanism as defined in claim 21 wherein said second elastic member engages to resist actuation movement of the actuation member when 40% to 10% of the actuation movement remains.

24. (previously presented) The ignition actuation mechanism as defined in claim 23 wherein the maximum force to resist the actuation operation caused by the combined first and second spring rates is 30N to 50N.

25. (previously presented) The ignition actuation mechanism as defined in claim 22 wherein said second elastic member engages to resist actuation movement of the actuation member when 40% to 10% of the actuation movement remains.

26. (previously presented) The ignition actuation mechanism as defined in claim 25 wherein the maximum force to resist the actuation operation caused by the combined first and second spring rates is 30N to 50N.

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27. (previously presented) The ignition actuation mechanism as defined in claim 22 wherein said second elastic member includes:

torsion plates integrally formed with said actuation member.

28. (currently amended) The ignition actuation mechanism as defined in claim ~~27~~ 22 wherein said second elastic member includes:

torsion plates acting on said actuation member.

29. (previously presented) The ignition actuation mechanism as defined in claim 26 wherein said actuation member and said torsion plates are integrally molded from polyacetal resin.

30. (previously presented) The ignition actuation mechanism as defined in claim 28 further including:

a holder member integrally formed with said second elastic member and positioned separate from said actuation member during an early portion of the actuation movement of said actuation member.

31. (previously presented) The ignition actuation mechanism as defined in claim 30 wherein said holder member and said torsion plates are integrally molded together from polyacetal resin.

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32. (previously presented) A spark ignition actuation mechanism for a lighter to ignite fuel gas when an actuation member is pressed including:

a first elastic member positioned to resist pressing movement of the actuation member having:

a first spring rate; and

a second elastic member positioned to act in parallel with said first elastic member to resist pressing movement of the actuation member having:

a second spring rate higher than said first spring rate, said second elastic member being positioned for engagement to resist pressing movement of the actuation member after a first portion of the pressing movement has occurred, whereby the effective spring rate to resist pressing movement of the actuation member increases sharply during a second later portion of the pressing movement.

33. (previously presented) The spark ignition actuation mechanism as defined in claim 32 including:

a piezoelectric mechanism for generating the spark having:

an actuation end; and

the actuation member, said actuation member being slidably mounted to operate said actuation end.

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34. (previously presented) The spark ignition actuation mechanism as defined in claim 33 wherein said second elastic member engages to resist actuation movement of the actuation member when 40% to 10% of the actuation movement remains.

35. (previously presented) The spark ignition actuation mechanism as defined in claim 33 wherein the maximum force to resist the actuation operation caused by the combined first and second spring rates is 30N to 50N.

36. (previously presented) The spark ignition actuation mechanism as defined in claim 33 wherein said first elastic member is positioned as part of said piezoelectric mechanism.

37. (currently amended) ~~The spark ignition actuation mechanism as defined in claim 32~~ A spark ignition actuation mechanism for a lighter to ignite fuel gas when an actuation member is pressed including:

a first elastic member positioned to resist pressing movement of the actuation member having:

a first spring rate; and

a second elastic member positioned to act in parallel with said first elastic member to resist pressing movement of the actuation member having:

a second spring rate higher than said first spring rate, said second elastic member being positioned for engagement

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to resist pressing movement of the actuation member after a first portion of the pressing movement has occurred, whereby the effective spring rate to resist pressing movement of the actuation member increases sharply during a second later portion of the pressing movement,

wherein said second elastic member is at least one flexible finger integrally formed with said actuation member.

38. (previously presented) The spark ignition actuation mechanism as defined in claim 37 wherein said actuation member and said at least one flexible finger are integrally molded from polyacetal resin.

39. (currently amended) ~~The spark ignition actuation mechanism as defined in claim 32~~ A spark ignition actuation mechanism for a lighter to ignite fuel gas when an actuation member is pressed including:

a first elastic member positioned to resist pressing movement of the actuation member having:

a first spring rate; and

a second elastic member positioned to act in parallel with said first elastic member to resist pressing movement of the actuation member having:

a second spring rate higher than said first spring rate, said second elastic member being positioned for engagement to resist pressing movement of the actuation member after a first

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portion of the pressing movement has occurred, whereby the effective spring rate to resist pressing movement of the actuation member increases sharply during a second later portion of the pressing movement,

wherein said second elastic member is at least one flexible finger positioned for acting on said actuation member.

40. (previously presented) The spark ignition actuation mechanism as defined in claim 39 further including:

a holder member integrally formed with said second elastic member and positioned separate from said actuation member during an early portion of the actuation movement of said actuation member, wherein said holder member and said at least one flexible finger are integrally molded together from polyacetal resin.

41. (new). The spark ignition actuation mechanism as defined in claim 32, wherein said actuation member comprises a unitary surface adapted for digital engagement by a user for pressing actuation.

42. (new). The spark ignition actuation mechanism as defined in claim 21, wherein said actuation member comprises a unitary surface adapted for digital engagement by a user for pressing actuation.